

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 4. This sheet, which includes Figs. 4 and 5, replaces the original sheet including Figs. 4 and 5.

Attachment: Replacement Sheet

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

REMARKS/ARGUMENTS

Applicant respectfully requests further examination and reconsideration in view of the above Amendments and the arguments set forth fully below. In the Office Action mailed February 22, 2005, claims 1 - 72 have been rejected. In response, the applicant has submitted the following remarks and amended claims 45 and 60. Accordingly, claims 1 - 72 are still pending. Favorable reconsideration is respectfully requested in view of the amended claim and the remarks below.

OBJECTIONS TO THE DRAWINGS

Within the Office Action, Fig. 4 is objected to because reference numbers 21 and 26 both refer to a signal processor. By the above Amendment, Fig. 4 has been amended such that reference number 26 refers to a "receiver processor".

OBJECTIONS TO THE SPECIFICATION

Within the Office Action, it is stated that the disclosure is objected to due to a number of informalities. By the above Amendments, the applicant has amended the specification according to the Examiner's requests.

REJECTIONS UNDER 35 U.S.C. § 102

Claims 1, 5, 6, 15, 45, 50 and 59 have been rejected under 35 U.S.C. § 102(b) as being anticipated by you as Patent No. 5,511,553 to Segalowitz (hereinafter Segalowitz). The applicant respectfully disagrees with this rejection.

Segalowitz teaches a device, system and method for monitoring multiple physiological parameters continuously and simultaneously. Within the Office Action it is stated that Segalowitz teaches an acquisition module coupled to a plurality of electrodes for acquiring electrical signals from the plurality of electrodes. In particular, the Office Action

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

states that element 184 in Fig. 8 and element 361 in Fig. 17 teach such an acquisition module. Because Fig. 17 does not include an element 361, the applicant respectfully assumes that the Examiner is referring to element 381 in Fig. 17.

Segalowitz teaches that element 381 in Fig. 17 is a plurality of amplifiers that are shown for simplicity as a single amplifier, and that each amplifier can include a filter for moving or suppressing undesirable portions of the detected signal [Segalowitz, Col. 28, lines 10 - 11 and 31 - 33]. Segalowitz also teaches that the output of each of these amplifiers is connected to an input of the analog multiplexer 401 [Segalowitz, Col. 28, lines 39 - 40]. Other than the word amp with a triangle around it in Fig. 8, element 184 is not described in the specification of Segalowitz at all. Segalowitz does not teach an acquisition module coupled to a plurality of electrodes for acquiring electrical signals from the plurality of electrodes.

In contrast to the teachings of Segalowitz, the method and apparatus for generating electrocardiogram precordial leads using a precordial central terminal of the present invention includes an acquisition module coupled to a plurality of electrodes for acquiring electrical signals from the plurality of electrodes. The present invention teaches an acquisition module electrically coupled to each one of the electrodes 18. As shown in Fig. 4, the acquisition module 20 is coupled to a belt 12, wherein the acquisition module 20 is used to acquire, process, and temporarily store electrical signals from the electrodes 18 [specification of the present invention, page 6, paragraph 28]. As described above, Segalowitz does not teach an acquisition module coupled to a plurality of electrodes that is used to acquire, process, and temporarily store electrical signals from the electrodes 18. As is discussed in Segalowitz, the amp (184, 381) are used to merely amplify electrical signals before they are sent to an encoder or multiplexer.

The independent claim 1 is directed to a device for acquiring and processing electrical signals produced by a patient's heart comprising a plurality of electrodes for

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

attachment to the patient's upper torso, wherein the plurality of electrodes does not include electrodes for attachments to the patient's limbs, an acquisition module coupled to the plurality of electrodes for acquiring electrical signals from the plurality of electrodes and a signal processor coupled to the acquisition module for generating a plurality of electrocardiogram precordial leads from the acquired signals. As described above, Segalowitz does not teach an acquisition module coupled to the plurality of electrodes for acquiring electrical signals from the plurality of electrodes. For at least these reasons, the independent claim 1 is allowable over the teachings of Segalowitz.

Claims 5, 6 and 15 are all dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Segalowitz. Accordingly, claims 5, 6 and 15 are also allowable as being dependent upon an allowable base claim.

The independent claim 45 is directed to a method of acquiring and processing electrical signals produced by a patient's heart comprising positioning a plurality of electrodes on the patient's upper torso, without positioning electrodes on the patient's limbs, acquiring electrical signals from a plurality of electrodes with an acquisition device and generating a plurality of electrocardiogram precordial leads from the acquired electrical signals. As described above, Segalowitz does not teach an acquisition device. For at least these reasons, the independent claim 45 is allowable over teachings of Segalowitz.

Claims 49, 50 and 59 are dependent upon the independent claim 45. As discussed above, the independent claim 45 is allowable over the teachings of Segalowitz. Accordingly, claims 49, 50 and 59 are also allowable as dependent upon an allowable base claim.

REJECTIONS UNDER U.S.C. § 103

Within the Office Action, claims 2 - 4, 16, 30, 33 and 46 - 48 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz in view of U.S.

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

Patent No. 4,026,278 to Ricketts, et al. (hereinafter Ricketts). The applicant respectfully disagrees with this rejection.

Ricketts teaches an electro positioning belt having a Velcro loop fabric along the inner surface. Ricketts does not teach an acquisition module coupled to the belt and the plurality of electrodes for acquiring electrical signals from a plurality of electrodes.

As stated in the Office Action, Segalowitz does not teach a belt adapted to be attached around the circumference of the patient's upper torso. Furthermore, Segalowitz does not teach an acquisition module coupled to the belt in the plurality of electrodes for acquiring electrical signals from the plurality of electrodes. Because neither Segalowitz nor Ricketts discloses an acquisition module as taught and claimed in the present invention, their combination then does not teach that which is claimed and taught in the present invention.

Claims 2 - 4 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Segalowitz. Accordingly, claims 2 - 4 are also allowable as being dependent upon an allowable base claim.

The independent claim 16 is directed to an electrocardiogram device for acquiring and processing electrical signals produced by a patient's heart comprising a belt adapted to be attached to the patient's upper torso, a plurality of electrodes coupled to the belt, wherein the plurality of electrodes does not include electrodes for attachments to the patient's limbs, an acquisition module coupled to the belt and the plurality of electrodes for acquiring electrical signals from the plurality of electrodes, a signal processor coupled to the acquisition module for generating a plurality of electrocardiogram precordial leads from the acquired electrical signals, a transmitter coupled to the acquisition module for transmitting the plurality of electrocardiogram precordial leads and a receiver wirelessly coupled to the transmitter for receiving the acquired electrical signals. As described above, neither Segalowitz, Ricketts nor their combination teach an acquisition module coupled to the belt in the plurality of electrodes for acquiring electrical signals from the plurality of electrodes.

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

For at least these reasons, the independent claim 16 is allowable over the teachings of Segalowitz, Ricketts and their combination.

The independent claim 30 is directed to an acquisition device for attachment to a patient and for acquiring electrical signals produced by the patient's heart comprising a belt adapted to be attached to the patient's upper torso, a plurality of electrodes coupled to the belt, the plurality of electrodes including at least one electrode position within the belt so that when the belt is attached to the patient, the electrode contacts that patient's chest, and at least one electrode positioned within the belt so that when the belt is attached to the patient the electrode contacts the patient's back, wherein the plurality of electrodes does not include electrodes for attachment to the patient's limbs, an acquisition module including a signal processor coupled to the belt and the plurality of electrodes for acquiring electrical signals from the plurality of electrodes and for generating a plurality of electrocardiogram precordial leads from the acquired signals and a transmitter coupled to the acquisition module for transmitting the plurality of the electrocardiogram precordial leads to a remote location. As described above, neither Segalowitz, Ricketts nor their combination teach the feature of an acquisition module including a signal processor coupled to the belt and the plurality of electrodes for acquiring electrical signals from the plurality of electrodes and for generating a plurality of electrocardiogram precordial leads from the acquired signals. For at least these reasons, the independent claim 30 is allowable over the teachings of Segalowitz, Ricketts and their combination.

Claim 33 is dependent upon the independent claim 30. As discussed above, the independent claim 30 is allowable over the teachings of Segalowitz, Ricketts and their combination. Accordingly, claim 33 is also allowable as being dependent upon an allowable base claim.

Claims 46 - 48 are dependent upon the independent claim 45. As discussed above, the independent claim 45 is allowable over the teachings of Segalowitz.

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

Accordingly, claims 46 - 48 are also allowable as being dependent upon an allowable base claim.

Within the Office Action, claim 7, 14, 51 and 58 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz as applied to claims 1, 5, 45 and 49 above and further in view of U.S. Patent No. 6,389,308 to Shusterman, et al (hereinafter Shusterman).

Claims 7, 14, 51 and 58 are dependent upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 7, 14, 51 and 58 are all allowable as being dependent upon an allowable base claim.

Claims 8, 11, 12, 52, 55 and 56 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz as applied to claims 1 and 45 above, and further of view of GE Medical Systems Information Technologies, ACI-TIPT Standard 12/15-Lead Placement.

Claims 8, 11, 12, 52, 55 and 56 depend upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 8, 11, 12, 52, 55 and 56 are also allowable as being dependant upon an allowable base claim.

Claims 9 and 53 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz and GE Medical Systems Information Technologies as applied to claims 8 and 52 and further in view of Shusterman.

Claims 9 and 53 are dependent upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 9 and 53 are allowable as being dependent upon an allowable base claim.

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

Within the Office Action, claims 10 and 54 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz, GE Medical Systems Information Technologies and Shusterman as applied to claims 9 and 53 above, and further in view of U.S. Patent No. 5,615,687 to Pritchard (hereinafter Pritchard).

Claims 10 and 54 are dependent upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 10 and 54 are allowable as being dependent upon an allowable base claim.

Within the Office Action, claims 13 and 15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Segalowitz and GE Medical Systems Information Technologies as applied to claims 12 and 56, and further in view of Pritchard.

Claims 13 and 57 are dependant upon the independent claims 1 and 45. As discussed above, the independent claims 1 and 45 are allowable over the teachings of Segalowitz. Accordingly, claims 13 and 57 are allowable as dependant upon an allowable base claim.

Within the Office Action, claims 60 and 71 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ricketts in view of Segalowitz and Shusterman.

The independent claim 60 is directed to a method of acquiring and processing electrical signals produced by a patient's heart comprising positioning a plurality of electrodes on the patient's upper torso, the plurality of electrodes including at least one electrode positionable on the patient's chest and at least one electrode positionable on the patient's back, wherein the plurality of electrodes does not include electrodes for positioning on the patient's limbs, acquiring electrical signals from the plurality of electrodes with an acquisition module, generating an approximation of an electrical potential near the center of the patient's heart by determining a weighted combination of a plurality of the acquired

Application No. 09/682,421
Amendment dated April 8, 2005
Reply to Office Action of February 22, 2005

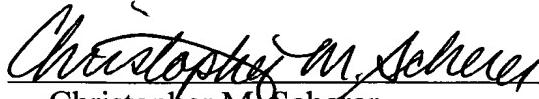
electric signals and generating a plurality of electrocardiogram precordial leads from the acquired electrical signals by subtracting the approximation of the electrical potential near the center of the patient's heart from each one of the signals acquired from the at least one electrode on the patient's chest. As described above, neither Ricketts, Segalowitz nor Shusterman nor their combination teach acquiring electrical signals from a plurality of electrodes with an acquisition module. For at least these reasons, the independent claim 60 is allowable over the teachings of Ricketts, Segalowitz, Shusterman and their combination.

Claim 71 is dependent upon the independent claim 60. As discussed above, the independent claim 60 is allowable over the teachings of Ricketts, Segalowitz, Shusterman and their combination. Accordingly, claim 71 is also allowable as being dependent upon an allowable base claim.

For the reasons given above, applicant respectfully submits that that the claims are now in a condition for allowance, an allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at 414-271-7590 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

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